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# Report of the Expert Group on the Integration of Statistical and Geospatial Information

## Note by the Secretary-General

In accordance with Economic and Social Council decision 2018/227 and past practices, the Secretary-General has the honour to transmit herewith the report of the Expert Group on the Integration of Statistical and Geospatial Information. In its report, the Expert Group summarizes the activities it has undertaken since the forty-ninth session of the Statistical Commission, in accordance with Commission decision 49/121. The work of the Expert Group has focused on the further elaboration of the five principles of the global statistical geospatial framework and its role in supporting the wide range of implementation and adoption activities with respect to the Sustainable Development Goals and the 2020 round of population censuses. An early draft of the five principles of the global statistical geospatial framework will be discussed at a side event on the margins of the fiftieth session of the Statistical Commission. The Expert Group additionally reviews its short- and longer-term statistical-geospatial interoperability projects, and the establishment of relationships with other relevant experts and processes within other areas of relevance, including disaster- and climate-related statistics. The Commission is invited to take note of the progress of the Expert Group in the elaboration of the five principles of the global statistical geospatial framework, the implementation of the framework and the progress of the Expert Group in the promotion and coordination of activities in the area of integration of statistical and geospatial information.

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# Report of the Expert Group on the Integration of Statistical and Geospatial Information

## I. Introduction

1. Pursuant to Statistical Commission decision 44/101, the Expert Group on the Integration of Statistical and Geospatial Information comprises members of both the statistical and the geospatial professional communities of Member States and relevant international organizations. Since its establishment in 2013, the Expert Group has reported to both the Statistical Commission and the Committee of Experts on Global Geospatial Information Management at each of their respective annual sessions.

2. The overall objectives and functions of the Expert Group are to pursue the implementation of the global statistical geospatial framework and its application towards the 2020 round of censuses with the understanding that it would apply to other initiatives, including other censuses, such as agriculture and economic censuses, and to the implementation of the 2030 Agenda for Sustainable Development. Additionally, pursuant to decision 48/108, the mandate of the Expert Group was strengthened for it to become the overall coordination group for all activities in the area of the integration of statistics and geospatial information.

3. In the present report, the Expert Group summarizes the activities it has undertaken since the forty-ninth session of the Commission, including the decisions emanating from the eighth session of the Committee of Experts in New York in August 2018 and the main outcomes of its fifth meeting of the Expert Group, held in Deqing, China, in November 2018 on the margins of the United Nations World Geospatial Information Congress. The Expert Group has reviewed and consolidated its progress towards the elaboration of the five principles of the global statistical geospatial framework, reviewed regional efforts with regard to the promotion, adoption and capacity-building activities relating to the framework and considered how the statistical-geospatial interoperability short- and longer-term projects can be completed. An early draft of the five principles of the framework will be discussed at a side event on the margins of the fiftieth session of the Statistical Commission. The Commission is invited to take note of the progress made by the Expert Group in the area of integration of statistical and geospatial information.

## II. Eighth session of the Committee of Experts

4. In its decision 8/108, adopted in August 2018, the Committee of Experts noted the valuable progress being made to further elaborate on the global statistical geospatial framework through its five principle task teams and endorsed the short- and longer-term statistical-geospatial interoperability projects first presented to the Commission at its forty-ninth session. Through the paper entitled "Global statistical geospatial framework: linking statistics and place",[1] provided as a background document to its report to the Committee of Experts, the Expert Group presented the current status and plans for the framework and identified case studies in which Australia, Egypt, Mexico, New Zealand, South Africa and Sweden had reported lessons learned from implementation of the framework.

5. The Committee of Experts supported the direction of and six key areas of focus for the current activities of the Expert Group: (a) increasing the engagement of the geospatial community within the work programme of the Expert Group;

[1] Available from http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/Global-Statistical-Geospatial-Framework-July-2018.pdf.

(b) elaborating the five principles of the global statistical geospatial framework; (c) implementing the short- and longer-term statistical-geospatial interoperability projects;[2] (d) promoting the adoption of the global statistical geospatial framework; (e) promoting capacity development activities that support and enable the implementation of the 2030 Agenda and the 2020 round of population and housing censuses; and (f) supporting the broadened scope of the Expert Group as the overall coordination group for all activities relating to the integration of statistical and geospatial information. Accordingly, the Expert Group is now considering the further implementation of the global statistical geospatial framework.

6. The Committee of Experts encouraged the Expert Group to continue to work with the proposed statistical domain working group of the Open Geospatial Consortium,[3] noting that interoperability projects proposed by the Expert Group reflected the direct collaboration and partnership between the statistical and geospatial communities. The Committee also encouraged the Expert Group to consider establishing relationships with other relevant experts and processes, including in the domains of disaster and climate change statistics.

7. On the margins of the eighth session of the Committee of Experts, the Expert Group convened a side event on the integration of statistical and geospatial information. This enabled the further promotion and understanding of the global statistical geospatial framework and integrating the broader work programme of the Expert Group within the geospatial community.

8. In a related area, by its decision 8/113, the Committee of Experts adopted the integrated geospatial information framework,[4] jointly developed by the United Nations and the World Bank, as an overarching strategic policy guide for Member States to reference when developing and strengthening their national and subnational geospatial information management systems and capabilities. The integrated geospatial information framework can provide an enabling mechanism for the strengthening of geospatial information management and capacity in Member States and, by extension, support statistical-geospatial interoperability and integration. The integrated geospatial information framework comprises three separate but interconnected documents: an overarching strategic framework; an implementation guide; and country-level action plans. The overarching strategic framework is composed of seven underpinning principles, eight goals and nine strategic pathways as a means for Governments to establish more effective geospatial information-management practices and policies. This high-level framework will act as an enabler for the further adoption and implementation of the global statistical geospatial framework, through strengthening the capacity of national geospatial information agencies, alongside existing frameworks and programmes that strengthen the capacity of national statistical offices.

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[2] These projects are derived from recommendations developed at the Workshop on Integrating Geospatial and Statistical Standards, convened jointly by the Economic Commission for Europe and the Regional Committee of United Nations Global Geospatial Information Management for Europe, and endorsed by the Committee of Experts at its eighth session (see http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/E-C20-2018-11-Add_1_Integration_of_geospatial_statistical_and_other_related_information.pdf).

[3] The Open Geospatial Consortium is an international not-for-profit organization committed to making quality open standards for the global geospatial community. These standards are made through a consensus process and are freely available from www.opengeospatial.org for anyone to use to improve sharing of the world's geospatial data.

[4] Available from http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/Part%201-IGIF-Overarching-Strategic-Framework-24July2018.pdf.

# III. Development of the global sta istical geospatial framework

9. The global statistical geospatial framework is a principles-based framework, endorsed by the Commission in its decision 48/108 in 2017 and adopted by the Committee of Experts in its decision 6/107 in 2016. At its fourth meeting, held in Stockholm in November 2017, the Expert Group formed task teams for each of the five principles of the framework, with each task team responsible for the elaboration of the corresponding principle. The task teams were led by two Expert Group members and augmented by other members as required. Each task team led the elaboration of its principle, with broad consultation across the Expert Group, through regular online conference discussions as and when required. Following its fifth meeting, the Expert Group established an editorial group to develop a consolidated paper on the elaborated principles in preparation for global consultation.

10. The five principles of the global statistical geospatial framework and updates from the principle task teams are set out below.

### Principle 1
### Use of fundamental geospatial infrastructure and ge coding

11. Developed by Mexico and Germany, this principle focuses on creating infrastructure that enables statistical-geospatial interoperability. This infrastructure supports the creation and provision of high-quality, standardized physical addresses, or property or building identifiers (or any other location elements), which allows the assignment of precise coordinates or grid references. The addition of a time and date stamp also places the unit in both time and space.

### Principle 2
### Geocoded unit record data in a data management environment

12. Developed by Australia and Sweden and using the infrastructure from principle 1, this principle supports the linking of each statistical unit record to a geographic reference (e.g. a coordinate or small geographic area) that will allow for statistics to be applied to any geographic context. This will support integration or linkage of data from other data sources and mitigate challenges that arise with new geographies or changes in existing geographies.

### Principle 3
### Common geographies for the dissemination of statistics

13. Developed by Poland and Canada, this principle determines the definitions of geographic regions and aggregation/disaggregation of data to regions. A common set of geographies will ensure that statistical data are geospatially enabled in a consistent manner and are able to be integrated at an aggregate level, and that users can discover, access, integrate, analyse and visualize statistical information seamlessly in geographies of interest.

### Principle 4
### Statistical and geospatial interoperability (data, standards, processes and organizations)

14. Developed by Eurostat and the Economic Commission for Europe, this principle enables greater standardization and interpretability of data, which will lead to improved efficiency and simplification in the creation, discovery, integration and use of geospatially enabled statistics and geospatial data. It also increases the potential application of a larger range of data and technologies, thereby enabling a wider range of information to be available and accessible for use in decision-making.

**Principle 5**
**Accessible and usable geospatially enabled statistics**

15. Developed by the United States of America and the United Kingdom of Great Britain and Northern Ireland, this principle supports data custodians in the release of data with confidence, improves the discovery of and access to geospatially enabled statistics, particularly through promoting web services to provide machine-readable and dynamic linkage to data, and supports analysis and evaluation of data in decision-making.

## IV. Fifth meeting of the Expert Group

16. The fifth meeting of the Expert Group was held in Deqing, China, on 22 and 23 November 2018, on the margins of the United Nations World Geospatial Information Congress, and hosted by the Government of China, through the Ministry of Natural Resources and the Zhejiang provincial government.

17. The primary objective of the Expert Group meeting was to finalize the work of the task teams in their elaboration of the five principles of the global statistical geospatial framework, review the outcomes of the recent sessions of the Statistical Commission and the Committee of Experts, review the integrated geospatial information framework and discuss the progression of the Expert Group's efforts with regard to the 2030 Agenda, the 2020 round of censuses and other integration activities related to statistical and geospatial information. The meeting was attended by 21 participants from 13 countries (Australia, Brazil, China, Egypt, Germany, Kuwait, Mexico, Oman, Poland, Senegal, South Africa, Uganda and the United Kingdom), five regional and international organizations (Statistics Division of the Department of Economic and Social Affairs of the Secretariat, Department of Field Support, United Nations Population Fund, Economic Commission for Latin America and the Caribbean, and Economic Commission for Africa) and representatives from the private sector network of the Committee of Experts.

18. Prior to the formal meeting of the Expert Group, members participated in the United Nations World Geospatial Information Congress, organizing a session on statistical-geospatial integration for the Sustainable Development Goals and the 2020 censuses. The session examined the benefits emerging from enhancing the geospatial interoperability of statistical, administrative and geospatial datasets and enabled by the global statistical geospatial framework and other developments. The session also discussed the challenges that national, regional and international data users and producers faced in integrating statistical, administrative and geospatial datasets to generate insights and inform decision-making. The session provided an opportunity to further promote the global statistical geospatial framework and reiterate the message aimed at building a combined and integrated statistical-geospatial community. The session also noted the emerging opportunity that earth observations provided to support the derivation and generation of statistics and urged national statistical offices to consider how to take advantage of that opportunity.

19. At its formal meeting, the Expert Group received presentations regarding the development of regional work in Africa, Europe, and Latin America and the Caribbean. These presentations demonstrated that there was considerable progress being made in the development, implementation and integration of the global statistical geospatial framework at the regional level. During the ensuing discussions, it was noted that regional cross-fertilization could also lead to the distillation of good practices and opportunities, along with the further development of capacity across regions. Accordingly, the Expert Group strongly encouraged collaboration and cooperation across and within regions to share experiences and support the promotion

of statistical-geospatial integration activities, particularly in facilitating implementation of the global statistical geospatial framework.

20. The Expert Group considered progress made since its fourth meeting with regard to statistical-geospatial interoperability. This included efforts to promote and establish the statistical domain working group by the Open Geospatial Consortium, an international geospatial standards body. This working group will identify requirements and use cases demonstrating how geospatial and statistical standards can support the integration of geospatial information into statistical systems for the purposes of broad discovery, analysis and use. It will then look at mechanisms to develop or adapt appropriate standards and models to support these requirements. The need for the working group to draw its membership from both the statistical and the geospatial communities was recognized; it will be open to both members and non-members of the Open Geospatial Consortium in order to establish an effective programme of work. The statistical domain working group and the Expert Group plan to co-host a meeting during 2019 to establish and begin the programme of work. The Expert Group strongly encourages active participation by the statistical community.

21. The Expert Group reiterated its appreciation of the voluntary efforts of its members and encouraged continued commitment to participating fully in its activities, underlining the value of those contributions in making effective progress on the desired programme of work endorsed by the Commission and Committee of Experts. The Expert Group requested that further contributions by its members be made in both technical and practical ways, for example, the translation of documents. The Expert Group requested the Secretariat and other stakeholders to investigate resourcing opportunities to support its programme of work.

22. To expand on its promotion and communications work, the Expert Group has implemented a wiki. This will document the Expert Group's reports, outputs and case studies of implementation of the global statistical geospatial framework and other related statistical-geospatial studies and papers. The Expert Group asked whether the Secretariat could consider developing a governance model for the use of the wiki that would foster the dissemination of information to Member States and the public, as well as enable a collaboration space for the Expert Group to develop its various outputs.

23. The Expert Group discussed the relevance of the integrated geospatial information framework, concluding that there was a strong enabling opportunity for that framework to support the implementation of the global statistical geospatial framework and statistical-geospatial integration more broadly. In the ensuing discussion, it was noted that there was a strong need to provide common vocabularies and definitions of terminologies across statistical and geospatial communities. That would further enhance integration and interoperability efforts among those communities, facilitating steps towards an integrated statistical-geospatial community.

24. Discussions on statistical-geospatial integration subsequently focused on the fundamental data needs of both national statistical offices and national mapping/geospatial information agencies. The global fundamental geospatial data

themes[5] are essential to supporting principle 1 (use of fundamental geospatial infrastructure and geocoding) of the global statistical geospatial framework and to providing national statistical offices and national mapping/geospatial information agencies with the geospatial datasets that can enable statistical-geospatial integration. The Expert Group noted the natural tension between these institutions: a national statistical office will often prefer consistent geographies (such as grids or stable statistical geographies) while national mapping/geospatial information agencies prefer geographies conforming to administrative divisions.

25. Noting the good progress in the elaboration of the five principles of the global statistical geospatial framework, the Expert Group has set an objective of those principles being completed for adoption by the Committee of Experts at its ninth session, in August 2019, and subsequent endorsement by the Statistical Commission at its fifty-first session, in 2020. It is anticipated that a global consultation on the framework, inclusive of the elaborated principles, will occur during the second and third quarters of 2019. An early draft of the five principles will be discussed at a side event on the margins of the fiftieth session of the Statistical Commission. It is worth noting that the framework is to be considered a living document, and therefore will be maintained on a regular basis to reflect updates and progress in the domain of statistical-geospatial integration.

26. In considering the progress and expansion of the Expert Group's work programme, the Expert Group has made significant progress in the elaboration of the five principles, which will be completed in 2019. Nevertheless, the recent enhanced mandate of the Expert Group, as the overall coordination group for all activities relating to the integration of statistical and geospatial information, has meant that items within its work programme are constrained owing to sufficient resources not being available within the Expert Group. Such items include those pertaining to the short- and longer-term statistical-geospatial interoperability project recommendations presented in its report to the Commission in 2017. Accordingly, the Expert Group seeks enhanced resourcing and participation from Member States in order to better deliver on its mandate and support the 2020 round of censuses and the 2030 Agenda in a timely and effective manner.

## V. Conclusion and the way forward

27. In adopting decision 8/108 in August 2018, the Committee of Experts acknowledged the broader need for statistical and geospatial integration, endorsed the short- and longer-term statistical-geospatial interoperability projects and supported the elaboration of the five principles of the global statistical geospatial framework. An early draft of the five principles will be discussed at a side event on the margins of the fiftieth session of the Statistical Commission.

28. The Expert Group has set the objective of providing the completed framework, inclusive of the elaborated principles, to the Committee of Experts at its ninth session,

[5] The 14 fundamental global geospatial data themes are as follows: (a) global geodetic reference framework; (b) addresses; (c) buildings and settlements; (d) elevation and depth; (e) functional areas; (f) geographical names; (g) geology and soils; (h) land cover and land use; (i) land parcels; (j) orthoimagery; (k) physical infrastructure; (l) population distribution; (m) transport network; and (n) water. These themes are considered to be fundamental with regard to the establishment of a country's geospatial infrastructure and have great relevant and potential impact on the statistical community when building capacity and statistical-geospatial interoperability. They were adopted by the Committee of Experts in its decision 7/104. The full list of themes and their full descriptions are available from http://ggim.un.org/meetings/GGIM-committee/8th-Session/documents/E-C20-2018-7-Add_1-Global-fundamental-geospatial-data-themes.pdf.

in August 2019, and to the Commission at its fifty-first session, in 2020, following an anticipated global consultation. The Expert Group will review and revise the framework on a continual basis. This will ensure that the Expert Group can optimize its resources in the development of the framework and be responsive to new developments and innovations, and ensure that the framework remains relevant for Member States. This includes the provision of definitions and vocabularies that clarify and support statistical-geospatial integration. To deliver this enhanced work programme, the Expert Group is seeking greater resourcing and participation to amplify its capacity to deliver its work programme, including its short- and longer-term statistical-geospatial interoperability project recommendations.

29. Through the efforts of the Expert Group, the Committee of Experts is continuing to work with the Statistical Commission to expand upon the global statistical geospatial framework as a globally consistent mechanism for enabling the integration of statistical and geospatial information.

## VI. Recommended action required by the Statistical Commission

30. The Commission is invited to take note of the report of the Expert Group, including its progress towards elaborating the five principles of the global statistical geospatial framework and the broader ongoing work to ensure the integration of statistical and geospatial information for Member States and the international community.